

BAAQMD
HEALTH RISK SCREENING ANALYSIS

Verizon Wireless
700 West 18th Street
Antioch, CA 94509

12 January 2005

SUMMARY

This document contains the health risk screening assessment prepared for a Verizon Wireless facility (plant 16456), located at 700 West 18th Street in Antioch, California. As a routine part of the evaluation of a permit application, the Bay Area Air Quality Management District (BAAQMD) prepared this screening risk assessment.

Verizon Wireless plans to operate an emergency standby generator diesel engine at this location. Particulates from diesel engine exhaust, a toxic air contaminant and a carcinogen, will be emitted during the operation of the engine. BAAQMD staff evaluates the possible impact of the diesel exhaust particulate emissions that will occur during routine operation of the diesel engine. The diesel exhaust particulate impact is expressed in terms of the increased risk of contracting cancer by individuals who live or work near the proposed engine.

The estimated increase in diesel particulate emissions that can be expected from this source are 0.97 pounds per year. Ambient air concentrations of diesel exhaust particulate were predicted using the ISCST3 air dispersion computer model. This model uses information about the facility and the emission rates of toxic air contaminants to estimate what concentrations would be expected in the air at various locations around the site. The estimated concentrations of diesel exhaust particulate are used to calculate the possible cancer and noncancer health risk that might be expected to arise from this exposure. These results are presented in Table 1.

The potential cancer risk was calculated using standard risk assessment methodology. For residents, they include the assumptions that exposures are continuous for 24 hours per day, 7 days per week for 70-years. For offsite workers, exposure is assumed to occur during work hours over the course of a 46 year career. The cancer risk is based on the "best estimates" of plausible cancer potencies as determined by the California Office of Environmental Health Hazard Assessment (OEHHA). The actual cancer risk, which cannot be determined, may approach zero. This type of analysis is considered to be health-protective.

Operation of this source for testing and maintenance is prohibited during normal school hours as well as during any school sponsored activity, as per the requirements of the California Air Toxics Control Measure for Diesel Engines. As a result of these operational restrictions, the risk to students will be negligible. The only way that the source may be operated while students are present will be during emergency shutdown periods, and at that time the students are likely to be sent home.

TABLE 1

Executive Summary Carcinogenic Risks		
Maximum Cancer Risk		
Residential Receptor	Industrial Receptor	Antioch High School
0.20 chances in a million	1.12 chances in a billion	Negligible

(The estimates of residential risk assume that individuals are in continuous residence during a 70-year lifetime. Estimates of industrial risk assume that an off-site worker is exposed 8 hours/day, 240 days/year for 46 years. The estimates of risk at the school assume that the source will not be operated while children are in attendance.)

School address: Antioch High School
 700 W. 18th Street
 Antioch, California 94509

Risk Screening Assessment for AN 10799, Verizon Wireless

I. Introduction

The BAAQMD Staff Risk Management Policy (May 9, 1991) states that a written risk screening analysis is to be prepared for any application for a new source of toxic emissions, or for any application for increased toxic emissions from a modified existing source.

II. Facility Description

Plant Name:	Verizon Wireless
Location:	700 West 18 th Street Antioch, CA 94509
Type of Operation:	Emergency Standby Diesel Generator
Plant #:	16456
Application #:	10799

III. Exposure Assessment

The toxic air contaminant of concern at this facility is diesel particulate, a carcinogen. 50 hours of operation for testing and maintenance of the standby generator is assumed. The estimated emission rate and annual emissions of diesel particulate that can be expected from this operation are shown in Table 2.

Ambient air concentrations were predicted using the ISCST3 air dispersion computer model. This model uses information about the facility and the emission rates of toxic air contaminants to estimate what concentrations would be expected in the air around the site. This source must comply with new CA ATCM requirements limiting operation to non-school hours; hence, scalars were used to simulate operation only during the hours of 4PM to 7AM. DOW Meteorological data was used. The estimated maximum concentrations of benzene are shown in Table 3.

IV. Risk Assessment

The estimated concentrations of diesel particulate are used to calculate the possible carcinogenic risks that might be expected to arise from these exposures. The results are presented in Table 4. In the case of [diesel particulate](#), the risk is due solely to inhalation exposure.

These potential risk values were calculated using standard risk assessment methodology. They include the assumptions that residents are present in their homes 24 hours/day, 7 days/week for 70-years; off-site workers are present 8 hours/day, 240 days/year for 46 years. Operation of this source for testing and maintenance is prohibited during normal school hours as well as during any school sponsored activity, as per the requirements of the California Air Toxics Control Measure for Diesel Engines. As a result of these operational restrictions, the risk to students will be negligible.

The potential for noncancer health effects is evaluated by comparing the long-term exposure level to a Reference Exposure Level (REL). A REL is a concentration level at or below which no adverse health effects are anticipated. RELs are designed to protect sensitive individuals within the population. Comparisons to RELs are made by determining the hazard index, which is the ratio of the estimated exposure level to the REL. Calculation of the noncancer health effects is unnecessary for this proposed project, because operations will be limited to those times when the students are not present.

The risk values are based in part on the "best estimates" of plausible cancer potencies as determined by the California Office of Environmental Health Hazard Assessment (OEHHA). The actual value of risk, which cannot be determined, may approach zero.

TABLE 2

Pollutant Emissions			
Pollutant	Maximum Emission Rate (gm/sec)	Maximum Annual Amount (lb/year)	Source of Emission(s)
Diesel Particulate	1.40 E-05	0.97	Emergency Standby Generator

TABLE 3

Annual Average Diesel Particulate Concentration in Ambient Air ($\mu\text{g}/\text{m}^3$)		
Maximum Residential Exposure	Maximum Industrial Exposure	Antioch High School Exposure
6.6 E-04	5.65 E-03	5.65 E-03

TABLE 4

Individual Carcinogenic Risk Resulting from Inhalation Exposure to Diesel Particulate		
Maximum Residential Exposure	Maximum Industrial Exposure	Antioch High School Exposure
0.20 chances in a million	1.12 chances in a million	Negligible